REMARKS

Claims 1, 3 to 6, 11 and 12 are pending in the application, with Claims 1, 6, 11 and 12, the independent claims, having been amended herein. Reconsideration and further examination are respectfully requested.

Claims 1, 3 to 6, 11 and 12 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,883,821 (Komaki) in view of U.S. Patent No. 5,390,035 (Kasson). Reconsideration and withdrawal of these rejections are respectfully requested.

Turning to specific claim language, amended independent Claim 1 is directed to a data conversion method of performing image processing on image data expressed in plural components by using a multi-dimensional look-up table, and outputting processed image data. The method includes setting grid positions of the multi-dimensional look-up table which has grids arranged at non-uniform intervals, generating a weight table to store weight values corresponding to the plural components based on the set grid positions, wherein the weight values are calculated by an integer computation, obtaining the weight values corresponding to the plural components of input image data by referring to the weight table, obtaining output data of grid points of the multi-dimensional look-up table which corresponds to the input image data, calculating the processed image data, which corresponds to the input image data, by interpolation using the obtained output data and the obtained weight values, wherein the interpolation is executed by a floating point computation, and normalizing the process of calculating and obtaining the weight values and the interpolation by a sufficiently large value which is a constant greater than a value corresponding to a maximum interval of the grids.

The applied art, namely Komaki and Kasson, is not seen to disclose or suggest the foregoing features of amended independent Claim1, particularly with respect to setting grid positions of the multi-dimensional look-up table which has grids arranged at non-uniform intervals. Neither is the applied art seen to disclose or suggest generating a weight table to store weight values corresponding to the plural components based on the set grid positions, wherein the weight values are calculated by an integer computation, obtaining the weight values corresponding to the plural components of input image data by referring to the weight table, obtaining output data of grid points of the multi-dimensional look-up table which corresponds to the input image data, calculating the processed image data, which corresponds to the input image data, by interpolation using the obtained output data and the obtained weight values, wherein the interpolation is executed by a floating point computation, and normalizing the process of calculating and obtaining the weight values and the interpolation by a sufficiently large value which is a constant greater than a value corresponding to a maximum interval of the grids.

According to the aforementioned features of the invention, the grids of the look-up table are arranged at non-uniform intervals, the weight values are calculated by an integer computation as shown in Equations 9, the interpolation is executed by a floating point computation as shown in Equations 10, the weight table is generated prior to image data to be inputted, and the weight values are normalized by a sufficiently large value (indicated by "L" in Equations 9 and 10) to process the weight value as an integer. In particular, the large value is a constant greater than a value corresponding to a maximum interval of the grids. According to this combination of features of the present invention, the interpolation processing is quickly and precisely performed in an efficient manner.

Komaki is generally seen to be directed to interpolation processing which uses an arithmetic expression that corresponds to a position of input data in a divided segment of an interpolation space. (Komaki, abstract; Figures 3 and 38; and column 3, lines 13 to 22). Komaki is seen to divide an interpolation space into a plurality of segments, and then to use an arithmetic expression during interpolation processing to determine a position of a particular one of the divided segments that corresponds to input data. (Komaki, Figures 38; column 13, lines 17 to 67; and column 14, lines 1 to 35). The multi-dimensional look-up table of Komaki is seen to be arranged in uniform intervals, as seen in Fig. 2 and related text of Komaki. (Komaki, Fig. 2). Accordingly, Applicant submits that Komaki cannot be seen to disclose or suggest the feature of the presnet invention of normalizing the process of calculating and obtaining the weight values and the interpolation by a sufficiently large value which is a constant greater than a value corresponding to a maximum interval of the grids, which are non-uniformly spaced.

In addition, Komaki is not seen in any way to disclose or suggest generating a weight table to store weight values corresponding to the plural components based on the non-uniformly set grid positions, wherein the weight values are calculated by an integer computation, obtaining the weight values corresponding to the plural components of input image data by referring to the weight table, obtaining output data of grid points of the multi-dimensional look-up table which corresponds to the input image data, and calculating the processed image data, which corresponds to the input image data, by interpolation using the obtained output data and the obtained weight values, wherein the interpolation is executed by a floating point computation.

In this regard, Kasson is not seen to remedy the foregoing deficiencies of Komaki. In particular, Kasson is seen to be directed to color conversion using a multi-variable function by dividing the input domain into polyhedra segments. (Kasson, abstract; Figures 5 and 14; column 7, lines 5 to 68; column 8, lines 1 to 68; and column 9, lines 1 to 45). Although the term "normalization" is mentioned in Figure 16 of Kasson, Applicant submits that this has nothing to do with the *normalization* of the process of calculating and obtaining the weight values and the interpolation by a sufficiently large value, as in amended independent Claim 1. The mention of normalization in Figure 16 of Kasson concerns the display of normalized interpolation errors *resulting* from three different interpolation methods, including the interpolation method disclosed in Kasson and two prior-art methods. (Kasson, Figure 16; column 22, lines 46 to 52). These interpolation errors were normalized for comparison purposes in Figure 16 of Kasson. Nowhere is Kasson actually seen to utilize a normalization process *during the calculating and obtaining of the weight values and during the interpolation process*, as in amended independent Claim 1, so as to reduce interpolation error. In contrast to the present invention, the interpolation method of Kasson, which is not seen to use a normalization step, results in an interpolation error as shown in the normalized interpolation errors of Figure 16.

In addition, the interpolation method of Kasson is seen to use equation (1) shown in column 15 thereof. In this regard, the variable Vt in equation (1) is seen to be a variable because "Vt is volume of an extracted tetrahedron". (Kasson, column 15, line 30). Accordingly, even the combination of Komaki and Kasson is not seen to teach a multi-dimensional look-up table which has grids arranged at non-uniform intervals, or the use of

a sufficiently large value in normalization which is a constant greater than a value corresponding to a maximum interval of the grid of the look-up table.

The remaining art of record is not seen to remedy the foregoing deficiencies of Komaki and Kasson with respect to amended independent Claim 1.

Accordingly, Applicant submits that the applied references, whether alone or in combination, for which no motivation or suggestion is seen, is not seen to disclose or suggest the elements of amended independent Claim 1. Applicant therefore submits that a *prima facie* case of obviousness has not been established with respect to amended independent Claim 1. M.P.E.P. § 2143.

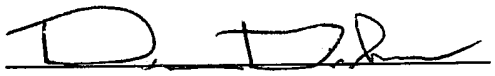
Based on the foregoing, amended independent Claim 1 is believed to be in condition for allowance and such action is respectfully requested. In addition, amended independent Claim 6 is directed to a data conversion apparatus, amended independent Claim 11 is directed to a computer program product storing computer program codes, and amended independent Claim 12 is directed to a computer readable medium with recorded data, all of which include substantially similar features as those of amended independent Claim 1. Accordingly, amended independent Claims 6, 11 and 12 are also believed to be in condition for allowance for the reasons discussed above with respect to amended independent Claim 1.

The other pending claims in this application are each dependent from the independent claims discussed above and are therefore believed patentable for the same reasons. Because each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, CA office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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